

CLAIMS.

1. A method of treating a patient for a neuro-degenerative disorder comprising administering to that patient a therapeutically effective amount of one or more of D- β -hydroxybutyric acid, acetoacetate, or a metabolic precursor or physiologically acceptable salt of D- β -hydroxybutyric acid or acetoacetate, such as to elevate the patient's blood level of ketone bodies, defined as the sum total of D- β -hydroxybutyric acid and acetoacetate, to a therapeutic level effective to treat the disorder wherein when a metabolic precursor is administered it is not hydroxybutyryl carnitine.
2. A method of treating a patient in order to treat a neuro-degenerative disorder comprising administering to that patient a therapeutically effective amount of at least one of D- β -hydroxybutyric acid, acetoacetate, or a metabolic precursor or physiologically acceptable salt of D- β -hydroxybutyric acid or acetoacetate, such as to elevate the patient's blood level of ketone bodies, defined as the sum total of D- β -hydroxybutyric acid and acetoacetate, to a therapeutic level effective to treat the disorder wherein the patient's blood level is elevated to from 0.3mM to 20mM.
3. A method of treating a CNS cell, peripheral nerve cell, or otherwise insulin insensitive cell in need of therapy for one or more of neuro-degeneration, GABA preventable seizure, or insufficient ability to metabolise glucose, comprising administering to that cell one or more compounds selected from the group consisting of D- β -hydroxybutyric acid, acetoacetate, compounds which are oligomers of D- β -hydroxybutyric acid, acetoacetyl esters of D- β -hydroxybutyric acid and acetoacetyl esters of oligomers of D- β -hydroxybutyric acid, and physiologically acceptable salts thereof.
4. A method of treating an patient for epilepsy, diabetes or an insulin resistant state comprising administering to that patient a therapeutically effective amount of one or more compounds selected from the group consisting of D- β -hydroxybutyric acid, acetoacetate and metabolic precursors of D- β -hydroxybutyric acid or acetoacetate which comprise

moieties selected from the group consisting of R-1,3-butandiol, acetoacetyl and D- β -hydroxybutyryl moieties and physiologically acceptable salts and esters thereof.

5 5. A method as claimed in any one of Claim 1, Claim 2, Claim 3 and Claim 4 wherein
on administration of the compound to an unfasted patient in need of such therapy, the blood
level of ketone bodies, defined as the sum total of D- β -hydroxybutyric acid and
acetoacetate, is raised to between 0.3 and 20mM.

10 6. A method as claimed in Claim 1 or Claim 2 wherein the neurodegenerative disorder
is selected from the group consisting of neurodegenerative disorders involving inability to
metabolise glucose, memory loss in ageing, neurotoxic peptides or proteins, and genetic
abnormality.

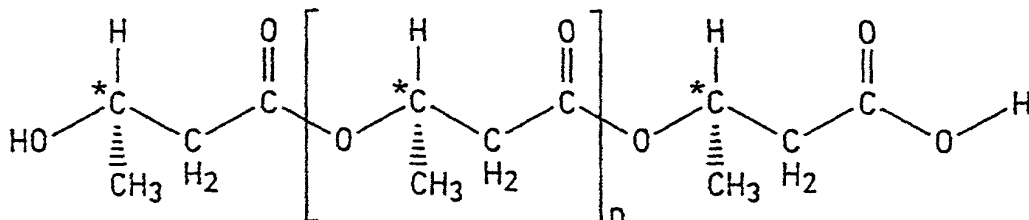
15 7. A method as claimed in Claim 6 wherein the neurodegenerative disorder is selected
from those involving neurotoxic protein plaques.

20 8. A method as claimed in Claim 1 or Claim 2 wherein the metabolic precursor is
selected from the group consisting of Free Fatty Acids and compounds comprising 1,3-
butandiol, acetoacetyl or D- β -hydroxybutyryl moieties.

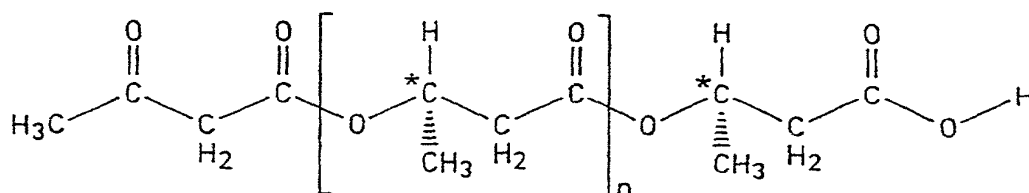
25 9. A method as claimed in Claim 1, Claim 2, Claim 3 or Claim 4 wherein the
metabolic precursor is a polymer or oligomer of D- β -hydroxybutyrate.

30 10 A method as claimed in Claim 9 wherein the metabolic precursor is an acetoacetyl
ester.

35 11. A method as claimed in Claim 9 wherein metabolic precursor is selected from
the group consisting of compounds of general formulae



and



or physiological acceptable salts or esters thereof

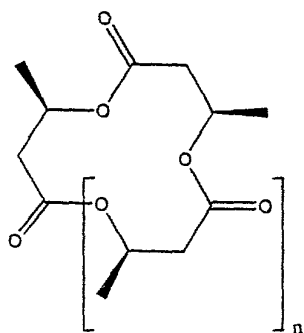
wherein in each case n is selected such that the polymer or oligomer is readily metabolised on administration to a human or animal body to provide elevated ketone body levels in blood

12. A method as claimed in Claim 11 wherein n is an integer of 0 to 1,000.

13. A method as claimed in Claim 11 wherein n is an integer of from 1 to 5.

14. A method as claimed in Claim 1, Claim 2, Claim 3 or Claim 4 wherein the level of ketone bodies produced in the blood is in the ratio 1:1 to 20:1 of D-β-hydroxybutyrate to acetoacetate.

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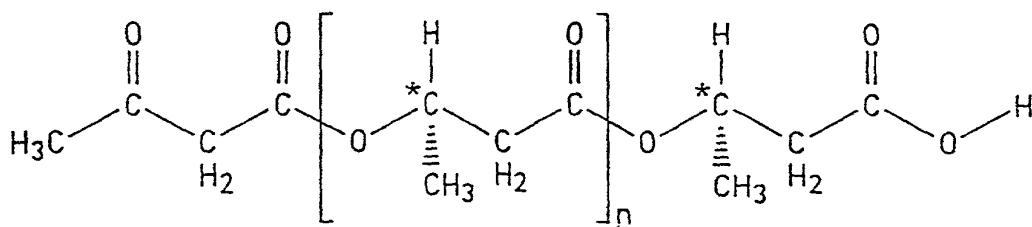


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20. A compound as defined in Claim 19 wherein the ester is selected from the group consisting of monohydric, dihydric or trihydric alcohol esters
- 5 21. A compound as claimed in Claim 19 wherein the ester is of (R)-1,3-butandiol.
22. A compound as claimed in Claim 19 wherein n is selected from the group of integers 0, 1, 2, 3 and 4.
- 10 23. A foodstuff comprising poly D- β -hydroxybutyrate characterised in that it is derived from a foodstuff generating organism that has had a gene capable of producing D- β -hydroxybutyrate inserted therein.
24. A foodstuff characterised in that it comprises at least 5% ketone bodies by
15 weight.
25. A method for the synthesis of D- β -hydroxybutyryl-acetoacetate or poly or oligo-D- β -hydroxybutyryl-acetoacetate esters comprising the reaction of acetoacetic acid halide with D- β -hydroxybutyrate or poly- or oligo-D- β -hydroxybutyrate.
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26. A method for synthesis of D- β -hydroxybutyryl-acetoacetate or oligo-D- β -hydroxybutyryl-acetoacetate comprising reacting D- β -hydroxybutyric acid with diketene.
- 25 27. A method of synthesising an oligomer of D- β -hydroxybutyric acid comprising heating a solution of D- β -hydroxybutyric acid in a solvent until an oligomer of a desired number of repeats is produced.
28. Use of D- β -hydroxybutyric acid, acetoacetate, or a metabolic precursor or
30 physiologically acceptable salt of D- β -hydroxybutyric acid or acetoacetate for the manufacture of a medicament for the treatment of a disorder by a method as set out in any one of Claims 1 to 14 provided that when the use is of a metabolic precursor that is not racemic

